

CLAIMS

1. A plastic identifying apparatus for identifying a kind of a plastic in an object to be identified, comprising:

5 an identifying and detecting portion for identifying the kind of the plastic included in the object to be identified; and

a toppling system for toppling the object to be identified by applying an external force to the object to be identified in order to change an identification face of the object to be identified facing the identifying and
10 detecting portion.

2. The plastic identifying apparatus according to claim 1, wherein the object to be identified comprises a first face and a second face that are used as the identification face and located adjacent to each other, and

15 in a state where the object to be identified is placed such that the first face faces the identifying and detecting portion as the identification face, the toppling system topples the object to be identified by applying a pushing force to at least a part of an end region of the second face on a side of the first face and at least a part of an end region of a third face, which is opposed to the
20 second face, on a side opposite to the first face, thereby allowing the second face to face the identifying and detecting portion as the identification face.

3. The plastic identifying apparatus according to claim 2, wherein the toppling system is a pair of pushing members, and

25 in the state where the object to be identified is placed such that the first face faces the identifying and detecting portion as the identification face, the pair of pushing members are provided so as to be movable in a direction crossing the second face and the third face of the object to be identified and apply the pushing force to the object to be identified by pushing the second
30 face and the third face directly.

4. The plastic identifying apparatus according to claim 2, wherein the toppling system comprises a pair of air nozzles, and

in the state where the object to be identified is placed such that the first face faces the identifying and detecting portion as the identification face, the pair of air nozzles are provided so that their jet tips face the second face and the third face and apply the pushing force to the object to be identified by expelling an air from the jet tips toward the second face and the third face of the object to be identified.

10

5. The plastic identifying apparatus according to claim 1, wherein the identifying and detecting portion allows an infrared light with a predetermined wave number to enter the object to be identified and detects an intensity of the infrared light that is totally-reflects by the object to be identified.

15

6. The plastic identifying apparatus according to claim 1, further comprising a pressing portion for pressing the object to be identified so as to bring the object to be identified into close contact with the identifying and detecting portion.

20

7. The plastic identifying apparatus according to claim 1, further comprising a holding portion for holding the object to be identified placed in the identifying and detecting portion.

25

8. The plastic identifying apparatus according to claim 1, further comprising a first cleaning portion for cleaning a face serving as the identification face of the object to be identified after being toppled.

9. The plastic identifying apparatus according to claim 8, further comprising

30

a holding portion for holding the object to be identified placed in the identifying and detecting portion, and the first cleaning portion is provided in a region in the holding portion facing the face serving as the identification face of the object to be identified after being toppled.

5

10. The plastic identifying apparatus according to claim 1, further comprising a second cleaning portion for cleaning the identifying and detecting portion.

10 11. The plastic identifying apparatus according to claim 10, wherein the second cleaning portion is provided in the toppling system.

12. The plastic identifying apparatus according to claim 1, further comprising an object-to-be-identified positioning portion used for positioning
15 at a time of placing the object to be identified in the identifying and detecting portion.

13. The plastic identifying apparatus according to claim 1, further comprising a displacement preventing portion for preventing a displacement
20 of the object to be identified from the identifying and detecting portion by restricting a position of one end portion of the object to be identified when the object to be identified is toppled.

14. A plastic identifying method for identifying a kind of a plastic in an
25 object to be identified, comprising:

(a) identifying the kind of the plastic included in the object to be identified placed such that a first face of the object to be identified serves as an identification face, using the first face;

(b) toppling the object to be identified so as to change the
30 identification face of the object to be identified facing an identifying and

detecting portion from the first face to a second face by applying an external force to the object to be identified;

(c) identifying the kind of the plastic included in the object to be identified using the second face of the object to be identified; and

5 (d) determining the kind of the plastic included in the object to be identified using an identification result obtained by using the first face and an identification result obtained by using the second face.

15 15. The plastic identifying method according to claim 14, wherein in the (b) toppling, the second face is adjacent to the first face in the object to be identified, and the object to be identified is toppled by applying a pushing force to at least a part of an end region in the second face on a side of the first face and at least a part of an end region in a third face, which is opposed to the second face, on a side opposite to the first face, thus placing the object to be identified such that the second face serves as the identification face.

16 16. The plastic identifying method according to claim 15, wherein in the (b) toppling, the pushing force is applied to the object to be identified by pushing the second face and the third face directly using a pushing member.

20

17. The plastic identifying method according to claim 15, wherein in the (b) toppling, the pushing force is applied to the object to be identified by blowing an air against the second face and the third face of the object to be identified.

25 18. The plastic identifying method according to claim 14, wherein in the (a) identifying and the (c) identifying, a plastic identifying apparatus comprising the identifying and detecting portion for identifying the kind of the plastic included in the object to be identified is used,

30 the (a) identifying is performed in a state where the first face of the object to be identified is in close contact with the identifying and detecting

portion, and

the (c) identifying is performed in a state where the second face of the object to be identified is in close contact with the identifying and detecting portion.

5

19. The plastic identifying method according to claim 14, wherein in the (a) identifying and the (c) identifying, the kind of the plastic in the object to be identified is identified by allowing an infrared light with a predetermined wave number to enter the object to be identified and detecting an intensity of the infrared light that is totally-reflected by the object to be identified.

10

20. The plastic identifying method according to claim 14, wherein the (b) toppling is started in a state where a third face of the object to be identified is supported.

15

21. The plastic identifying method according to claim 14, further comprising cleaning the second face of the object to be identified between the (a) identifying and the (b) toppling.

22. The plastic identifying method according to claim 14, wherein in the (b) toppling, the identifying and detecting portion is cleaned.

20

23. The plastic identifying method according to claim 14, wherein in the (a) identifying and the (c) identifying, an identification operation is stopped and the object to be identified is discharged if the object to be identified is judged not to be placed at an accurate position with respect to the identifying and detecting portion.

25